

ENERGY & GEOPOLITICAL RISK

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Iraq Grand Upstream Opening: Legal Challenges Kurdish Oil Demands



ENERGY & GEOPOLITICAL RISK



Since the later part of the 19th century oil and gas have dominated the lifestyle and welfare of the human species. The pursuit of oil and gas has brought about technological innovations that have produced both beneficial and harmful consequences for the development of human welfare. On one hand they have helped to improve the quality of human life and contributed to the reduction of disease, illiteracy, poverty and insecurity. On the other hand no other source of energy has created such devastating and unabated political instability among nations. The ensuing geopolitical risk identification, management and mitigation with respect to energy sources constitutes a central factor in the modern international relations. Their ramifications cross all boundaries among the mutually dependent economic, political, social and environmental factors that shape the plans and aspirations of nations.

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COMMENTS

The Grand Opening of the Iraqi Upstream has been one of the major plays in the global industry, due to the participation of the IOCs in Iraqi oil development, and the planned increase in production capacity from 2.5mn b/d to over 11mn b/d. The program, though it has taken off, is full of challenges. Mr. Thamir Ghadhban, a Senior Advisor to the Iraqi Prime Minister, and a former Minister of Oil, outlines some of the challenges ahead and how they would be dealt with. These include: the legal issues still to be resolved; Kurdish oil demands; and, the role and writ of the planned INOC.

Professor Bassam Fattouh reviews the sharp swings of oil prices, answering first whether the oil market has been “financialised”, as is asserted by some market analysts. The author then analyzes in great detail the evolution of oil pricing mechanisms, focusing on how prices are announced by the news agencies, and the differences of the various benchmarks references- how they have evolved- and what do these flagships of the pricing system mean. Mr. Fattouh concludes that the “assessed price of a benchmark does not always refer to a particular ‘physical’ crude stream. It rather refers to a constructed ‘index’ which is derived on the basis of a simple mathematical formula which aggregates the assessed prices of the different crudes.”

International sanctions on Iran have so far failed to halt Iran’s nuclear activities; however, Amrita Sen and Helima Craft, Researchers at Barclays Capital Commodities Research (London) argue that the sanctions have had their toll on Iran’s petroleum industry: inability to capitalize on the fact that the country possess the world’s 3rd largest proven oil reserves; failure to raise crude output levels, whereby 400-700 thousands b/d of crude production is lost annually because of the decline in mature fields; lack of success in curtailing some of the highest decline rates in its fields (Iran’s fields have a natural decline rate estimated at 8% onshore and 11% offshore, with recovery rates at 20-25%, or at least 10% less than the global average). Moreover, the sanctions have led to increasing withdrawal of IOCs from Iran and major delays in projects.

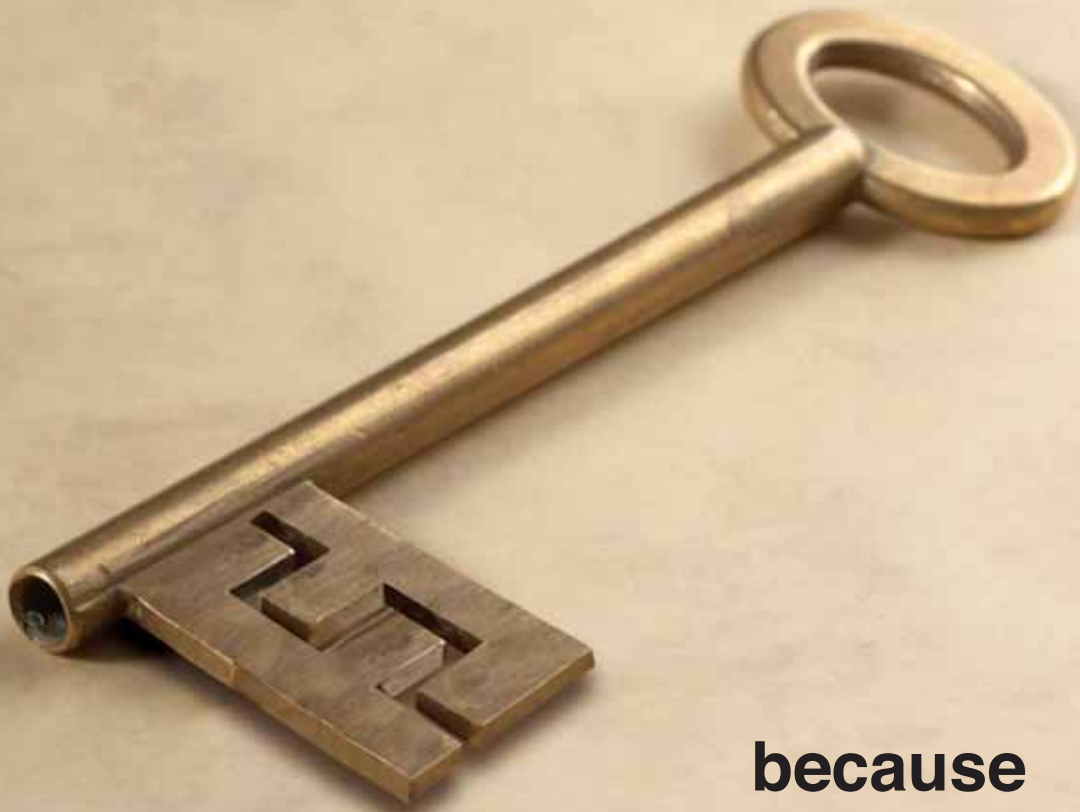
Dr. Hisham Khatib, a former Jordanian Energy Minister, reviews the functions and organizational structure of the World Energy Congress (WEC), focusing on the WEC 21st Congress which was held in Montreal last September. Four challenges face the global energy community, constituting the main themes of the Montreal venue: Accessibility, Availability, Acceptability and Accountability. A brief review of each of these themes was provided by the author, highlighting the Montreal deliberations.

A main feature of the monthly MEES: Energy & Geopolitical Risk is a focus on water issues in the Middle East. Two articles are provided here: The need for more desalination plants in Saudi Arabia during the next 10 years at a projected cost of \$50bn. The article is reproduced from the Saudi Gazette which covered the Jeddah-based conference: Water and Power Forum 2010. The second regional water issue covered is the brewing water crisis between the Nile upstream and downstream countries. The author, the Chairman of the Board of Directors of al-Ahram, Abdul Mohsin Said Aly, reviews the history of the treaties governing the use of the Nile waters, highlighting the traditional importance of the Nile to Egypt, which constitutes one of the foremost national security priorities for the country.



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Iraq's Upstream Oil Industry: The Next Legislative Challenge*

Thamir A. Ghadhban**



Iraq's upstream industry is going through very interesting times and the period to come will be crucial to the success of the tasks at hand. It holds many challenges, and the outcome will no doubt have an important impact on the regional and global energy scenes.

Let me start first by outlining those challenges, before I touch on the legislative dilemma we have been facing under the outgoing government, and the legislative reform that needs to go hand in hand with the unprecedented transformation of our oil and gas sector. Before signing off, I will share with you my views on the period to come and the issues that will face any new government that will take over next.

As you know, Iraq has embarked on a substantial program to build up the country's crude oil and gas production capacity as well as export capacity, in cooperation with international oil companies (IOCs). There are three main features of this grand opening which are worth stressing here. The first is the very transparent and highly competitive way in which contracts were awarded to international oil companies in the first and second bid rounds. The second is the model contract that was used in the two oil bid rounds, which marked a departure from the classic production sharing contracts. The third is the unprecedented high economic return that will accrue to Iraq as the host government, under this type of contract.

The 12 oil field development contracts that were awarded in the two bid rounds - and in direct renegotiation of an older contract in the case of Al-Ahdab development contract - will help increase Iraq's current oil production capacity several folds in the next decade. Once realized, it will put Iraq back in a leading position among the world's oil producers, and play a major role in insuring world stability, through its participation in guaranteeing a steady energy supply. This production increase shall be achieved through further development of producing fields, as well as bringing some partially developed or non-developed fields into production. Additional output would come from fields operated by our four regional oil companies; North Oil Co, South Oil Co; Missan Oil Co and the newly created Midland Oil Co, as well as from Iraq's federal region of Kurdistan.

*Presentation to the Iraq Future Energy 2010 Conference, held in Istanbul on 27 September, 2010.

** Mr. Thamir Ghadhban is Chairman of the Advisory Commission, Office of the Prime Minister, Iraq.



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There are many objectives behind the award of recent service-type contracts besides ramping up production capacity and increasing oil revenues. Among these is the transfer of technology; the introduction of modern technical and financial type of management; capacity building and training of Iraqi personnel in all required skills; as well as providing work opportunities to Iraqis through the required utilization of national content. However, it is the IOCs' responsibility to provide investment, further develop oil fields in accordance with approved development plans, and shoulder the responsibility for meeting production targets.

We are currently seeing the first steps of the huge work that needs to be executed under these contracts, such as the drilling, completion and work over of several thousand of wells; the construction of gas processing plants and the laying of thousands of kilometers of flow lines and pipelines. Implementation on the ground is progressing on schedule since the contracts entered into effect, and the management structures stipulated in the contracts are already in place. We will soon see a huge ramp up of the oil and gas production and processing facilities, together with a sophisticated water injection network inside the fields, and a huge water supply system put in place. The gas network has got to be expanded in line with the development of oil production capacity. The Oil export network is undergoing an expansion push which comprises adding storage capacity, large diameter export pipelines and offshore loading facilities.



Legislative/Economic Reforms

In parallel to this effort taking place on the ground, there is another process taking place at the government level, which aims at introducing the right legislative and economic reform, to rise up to the challenges that the new oil production capacity and associated increase in state revenues, would bring about in the next few years.

The rationale behind legislative reform stems from constitutional obligations.

Article 25 of the Iraqi constitution states that "The State shall guarantee the reform of the Iraqi economy,...,to ensure the full investment and diversification of its sources, and the encouragement and development of the private sector".

Furthermore, Article 106 of the constitution calls for the establishment of a public commission to audit and appropriate federal funds; to verify the fair distribution of grants, aid, and international loans; the ideal use and division of the federal financial resources; and finally to guarantee transparency and fairness in appropriating funds.

Two more very relevant articles, Articles 111 and 112, define ownership of oil and gas reserves, the management of present fields, equitable distribution of revenues and finally the formulation of oil and gas strategies. The constitution stipulates in those articles that those mandates shall be regulated by laws. Moreover, the constitution stipulates that Iraq is a federal state and powers of the authorities are classified as either exclusive, shared or regional powers. Hence, old

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legislations that once regulated the oil industry, are not adequate anymore, and do not address the new conditions in Iraq. Another motivation behind the need for new legislation is the need for good governance, which entails among other requirements, the separation between regulatory, commercial and operational tasks. This applies to the Ministry of Oil as well as others.

Kurdish Oil Demands

This takes me back to the package of the four draft legislations, in particular the draft oil and gas law that became subject of debate during 2007, domestically and abroad. Those drafts were prepared to regulate the upstream sector of the Iraqi oil industry and to achieve a fair and equitable distribution of revenues. The draft oil and gas law has been with the Council of Representatives since 2007 and was followed later by the Iraq National Oil Company (INOC) draft law. There were several reasons behind the legislative stalemate, but the main one is the request of the Kurdish parliamentary block to postpone the debate on oil legislation until an accord is reached regarding the pending issues in the oil and gas law. The main pending issues are related to demands for changes that were presented by the Kurdish side, represented by the Kurdish Regional Government (KRG) Ministry of Natural Resources. Here is a quick overlook of these demands for changes of the relevant articles:



- Article 8: that the role of the Council of Ministers should be limited to “follow up” but not “supervisory” function as it was agreed in the original draft.
- Article 12: that a “specialized entity” which could be a regional oil ministry, and not the federal Ministry of oil, should have the right to award and execute oil operation supply contracts that are outside the exploration, development and production contracts.
- Article 14: that the KRG would share in the management and operation of fields in the Kurdish region which are assigned by the proposed Federal Oil and Gas Council to INOC.
- Article 39: that assets ownership shall belong to the “specialized entity” meaning KRG’s Ministry of Natural Resources, but not to the federal authority or ministry on expiry of contract.
- Article 45: regarding arbitration, that a dispute shall be referred to the “specialized entity” but not the Ministry of Oil, if it can’t be resolved amicably.
- Finally regarding the Annexes to the oil and gas law, there was disagreement on the allocation of certain fields to INOC.

It is worth noting here that all of the above points, except for the last one, were raised by the KRG well after the negotiating committee, of which the KRG Minister of Natural Resources was a member, had completed drafting and unanimously agreed to the now famous text of Feb 15th 2007, and after the Council of Ministers had approved it on Feb. 26th of the same year.

The Ministry of Oil and the federal government are of the view that downgrading the role of the Council of Ministers, from a supervisory to a follow up role, is inconsistent with the status of the Council of Ministers. Similarly, the management of INOC, as a national oil company, cannot be shared, irrespective of the geographic location of its operations, a proviso for its success.



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What made it more difficult to introduce the much needed legislations I referred to earlier, is the conflict created by the unilateral signing by the KRG, of numerous production sharing contracts for exploration and development of oil fields, and the response of the Ministry of Oil and the federal government.

Issues such as the legality of awarding those contracts; the type of model contract used; the lack of transparency in awarding them; the award of some contracts in the so called disputed areas; failure to reach a sustainable solution to the evacuation of oil produced in the region; and more recently the trucking of the oil produced in the region across Iran to the Arabian Gulf regardless under what form and whether it is crude or refined; all of these were not conducive to reaching an agreement on the legislation needed for the Iraqi oil sector as a whole.

Future Outlook

I firmly believe that had the package of four legislations been passed, we would not be in such a situation. The formation of a Federal Oil and Gas Council with its powers and the representation of all players on its board, as stated in the draft oil and gas law, would have provided an effective tool and a streamlined process of awarding contracts, in addition to defining the right policies, and provide planning and supervision. The Council, according to the same draft, would be in charge of issuing regulations for licensing and contracting, the prequalification of companies and preparation of model contracts for exploration, development and production. It would have the powers to assess and decide on contracts negotiated by competent entities, once they are initiated. It



was to be tasked with deciding on production, at the national level, and its variation as required. So, in reality the Federal Oil and Gas Council should – and would have been - the highest executive body in the country, in charge of overseeing the upstream sector.

Similarly, the package of laws would have resulted in the reorganization of the Ministry of Oil, in such a way that it would concentrate on being more of a regulatory body, as far as the upstream sector is concerned. The Ministry would be in charge of:

- Proposing federal policies, laws and oil plans;
- The preparation of draft regulations and issuing of directives and procedures;
- The monitoring and supervision of oil operations, in coordination with regions and producing governorates, to ensure unified implementation, adherence to federal laws and regulations, and contractual terms;
- Verification of cost and government take.

The Ministry would also prepare the draft exploration and development policies and plans, in consultation with regions and producing governorates, to determine production levels, optimum solutions for geographic distribution, and timing of development programs. All of the above would be presented to the Federal Oil and Gas Council for review and approval.

Once these reforms are introduced, INOC would take the responsibility of almost all the upstream operations. The draft legislation of INOC authorizes it to become a holding company, owning all of the existing operating companies from day one.

But let's turn now to the future which, as I said in my introduction, is not less challenging. As you know, it has been quite a while since legislative elections took place on 7 March. The negotiations between the winning parties on the formation of the new government have taken too long. But I hope we will soon see the birth of a new coalition government. However, rest assured that the oil issues we are discussing are of paramount national interest, and as such, they are well attended to by the Council of Ministers, even during this transitional period. Only last week, the cabinet approved the latest projects related to the massive oil field development effort I talked about in the beginning, which are the water injection scheme, and the pipeline network which will expand the country's export capacity.

I am of the opinion that Iraq's future government is fortunate as far as the upstream oil industry is concerned, due to the fact that it shall reap the benefits of what the present government has achieved so far. Having said that, and in view of the importance of oil and gas to the future and wellbeing of the Iraqi people, the next government will have the following



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issues on its agenda that it will be required to deal with as a matter of priority:

- First, is the effective implementation of currently signed contracts in accordance with the contractual obligations. This will include the removal of all logistical bottlenecks and easing of regulations and procedures related to the movement of people and goods; the speeding up of various governmental acts together with carrying out all related projects such as pipeline network and export facilities. Whatever the shape or color of the next government, it will abide by the signed contracts and will expect the IOCs to abide by their contractual obligations as well. If anyone has any doubt about the validity of those contracts, I refer you to a recent federal court decision regarding the case brought on by one MP concerning one of those contracts. If anyone on the other hand has any doubts that those contracts could be renegotiated, I want you to rest assured that there will be no renegotiation.
- Second, is the need to find an amicable and comprehensive solution, to the issues related to production and export of oil produced in the federal region of Kurdistan. Such a solution is urgently needed for the benefit of the whole country. However, any solution needs to be based on a solid foundation, in order to be sustainable. Payment of costs to oil companies in the KRG ought to be carried out according to the terms of the contracts signed and according to the same procedure followed in contracts signed by IOCs in the rest of Iraq. In other words, those costs should not be paid from the KRG's 17% share of revenues. In order to do so, the KRG contracts should be made entirely available to the Ministry of Oil and the federal government, for review and vetting in order to reach agreement on the process to follow. The Ministry of Oil cannot act as a pay master, for obligations that it has not been party to, nor has full knowledge of.
- Another priority of the next government would be a review and final agreement on the oil and gas legislative reform. I expect any future government to give priority to the package of four draft laws related to the oil and gas sector, in order to put them in their final form for parliamentary debate and legislation. As I said earlier, passing those laws followed by the relevant bylaws and procedures in time would put in place the necessary legal and institutional framework that shall regulate the upstream industry, and provide a healthy business environment in the whole of Iraq, and put an end to the conflicts we have seen in the past.
- The re-establishment of INOC as a state owned upstream company that is administratively and financially independent, reporting directly to the Council of Ministers, and chaired by a member of the board with a rank of minister is another priority.
- The gas sector is another priority. Here I stress on the need to finalize the South Gas Project and put an end to the flaring of the much needed gas on one hand, and the awarding of contracts for the development of the three non-associated gas fields of Akkaz, Mansoriya, and Siba on the other hand, in the event where those two are not finalized by the outgoing government. Exploration for gas, especially in the Western Desert should also be one of the priorities on the agenda of the next government.

Future of Iraq

In conclusion, I would like to say that I am very optimistic about the future of Iraq, and my high expectations can be justified in the following points:

- I expect the disagreements between the federal government and the KRG to be solved swiftly and fairly to the benefit of all.
- I expect the IOCs who signed field development contracts with Iraq, to stick to the contractual schedule, and the government of Iraq is already doing its utmost to carry out its obligations towards those contracts on time.
- There is a high degree of alignment between the two parties, and I mean by that the government of Iraq and the IOCs, to ensure a beneficial relationship on the long term.
- The focus of our energy sector will be next on gas, be it associated or non-associated gas, in order to cater for the basic service of providing adequate electricity generation to our people. We need to put an end to the flaring of our associated gas soonest, we need to develop the discovered gas fields, and as I said earlier we need to explore for additional gas reserves in under explored and high potential areas. This concerted effort in the gas sector will ensure self sufficiency in natural gas for power generation and the industrial sector as well turn Iraq into a gas exporter in the next few years.
- Finally, I would like to end on an optimistic note. Iraq's democracy is a nascent experience, and the delays in government formation might be frustrating to many. But rest assured that this is a process in the making and Iraq is on the right track.

An Anatomy of the Oil Pricing System*

Bassam Fattouh**



The sharp swings in oil prices and the marked increase in volatility during the latest price cycle have focused attention on the possibility that crude oil has acquired the characteristics of financial assets such as stocks or bonds. The view that the oil market has become 'financialised' and that crude oil price behavior in recent months has mimicked the behavior of other financial assets has gained credence among many analysts. However, the nature of 'financialisation' and its implications are not yet clear. Discussions and analyses of 'financialisation' of oil markets have partly been subsumed within analyses of the relation between finance and commodity markets indexes which include crude oil. The elements that have attracted most attention have been outcomes: correlations between levels, returns, and volatility of commodity and financial indexes.

However, a full understanding of the degree of interaction between oil and finance requires, in addition, an analysis of processes: the investment and trading strategies of distinct types of financial participants; the financing mechanisms and the degree of leverage supporting those strategies; the structure of oil derivatives markets and financial instruments; and most importantly, the mechanisms that link the financial and physical layers of the oil market.

One important aspect of the "financialisation" of crude oil often highlighted is the increasing role that expectations play in the pricing of financial instruments. For instance, in the case of equities, pricing is based on expectations of a firm's future earnings. In the oil market, expectations of future market fundamentals have increasingly been playing an important role in oil pricing. If there is large uncertainty as to what the long-term oil market fundamentals are, or if perceptions of these fundamentals are highly exaggerated and inflated, then the oil price can diverge away from its true underlying fundamental value causing an oil price bubble. However, unlike a pure financial asset, the crude oil market also has a 'physical' dimension that should, in principle, anchor these expectations in oil market fundamentals: crude oil is consumed, stored and widely traded with millions of barrels being bought and sold daily at prices agreed by transacting parties. Thus, in principle, prices in the futures market through the process of arbitrage should eventually converge to the so-called 'spot' prices in the physical markets. These 'spot' prices form the underlying basis of physical supply agreements and should reflect existing supply-demand conditions.

**The article is published jointly with The Oxford Energy Forum.*

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In the oil market, however, the story is more complex. To begin with, the 'current' market fundamentals are never known with certainty. The flow of data about oil market fundamentals is not instantaneous and is often subject to major revisions which make the most recent available data highly unreliable. More importantly for this article, though many oil prices are observed on screens and reported in the media, it is important to understand what these different prices really mean. Thus, although the futures price often converges to a 'spot' price, it is important to understand the process of convergence and what the 'spot' price, in the context of the oil market, really means.

Unfortunately, little attention has been devoted to such issues and the processes of price discovery and price formation in oil markets remain under-researched. It is important to stress that while this topic is strongly inter-linked to the role of speculation versus fundamentals in determining oil prices, it goes beyond the existing debates which have dominated policy agenda. It offers a fresh and deeper perspective on the current debate by identifying the various layers relevant for the price formation process and by examining the links between the financial and physical layers in the oil market, which lie at the heart of the current international oil pricing system.

Background to the Oil Pricing System

The collapse of the OPEC administered pricing system in 1986 ushered in a new era in oil pricing in which the power to set oil prices shifted from OPEC to the 'market'. First adopted by the Mexican national oil company (PEMEX) in 1986, the market-related pricing system received wide acceptance among many oil-exporting countries and by 1988 it became and still is the main method for pricing crude oil in international trade. The oil market was ready for such a transition. The end of the concession system and the waves of nationalizations which disrupted oil supplies to multinational oil companies established the basis of arm's-length deals and exchange outside the vertically and horizontally integrated multinational companies. The emergence of many suppliers outside OPEC and many buyers further increased the prevalence of such arm's-length deals. This led to the development of a complex structure of interlinked oil markets which consist of spot and also physical forwards, futures, options and other derivative markets referred to as paper markets. The most complex structures emerged in the North Sea around Brent and in North America around the West Texas Intermediate (WTI).

Physical delivery of crude oil is often organized through long term contracts. These contracts are negotiated bilaterally between buyers and sellers for the delivery of a series of oil shipments. They specify among other things, the volumes of crude oil to be delivered, the delivery schedule, the actions to be taken in case of default, and above all the method that should be used in calculating the price of an oil shipment. Price agreements are usually concluded on the method of formula pricing which has become the basis of the pricing system.

Formula pricing has two main advantages. Crude oil is not a homogenous commodity. There are various types of internationally traded crude oil with different qualities and characteristics which have a bearing on refining yields. Thus, different crudes fetch different prices. Given the large variety of crude oils, the price of a particular crude oil is usually set at a discount or at a premium to a marker or reference price according to its quality and the relative demand-supply conditions. These reference prices are often referred to as benchmarks or 'open market spot prices'. The formula used in pricing oil in these contracts is straightforward. Specifically, for crude oil of variety x, the formula pricing can be written as $P_x = PR \pm D$ where P_x is the price of crude x, PR is the benchmark crude price and D is the value of the price differential. The differentials are adjusted periodically to reflect differences in the quality of crudes as well as the relative demand and supply of the various types of crudes.

Another advantage of formula pricing is that the price of physical deliveries can be linked to the time of delivery. When there is a lag between the date at which a cargo is bought and the date of arrival at its destination, there is a price risk. Transacting parties usually share this risk through the pricing formula. Agreements are sometimes made for the date of pricing to occur around the delivery date. For instance, in the case of Saudi Arabia's exports to the United States, the date of pricing can vary between 40 to 50 days after the loading date. The price used in contracts is the benchmark quotes averaged over 10 days around the delivery date which renders the point of sale closer to the destination than the origin.

At the heart of formulae pricing is the identification of the price of key 'physical' benchmarks, such as West Texas Intermediate (WTI), Dated Brent and Dubai. These benchmark crudes are widely used in contracts and are often inaccurately referred to as 'spot' market prices. Since these constitute the basis of the large majority of physical transactions, some observers claim that derivatives instruments such as futures, forwards, options and swaps derive their value from the price of these physical benchmarks i.e. the prices of these physical benchmarks drive the prices in paper markets. However, as argued below, this is a gross over-simplification and does not accurately reflect the process of crude oil price formation.

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Main Features of Benchmarks

It is important to stress three features of crude oil benchmarks that are useful for our analysis later on. First, the prices of these benchmarks are not directly derived from physical markets. Instead, the prices are assessed or identified by oil pricing reporting agencies such as Platt's and Argus Media. Assessments are needed in opaque markets such as oil where transactions concluded between parties cannot be directly observed. Assessments are also needed in illiquid markets where not enough transactions occur. One of the most interesting features of the current oil pricing system is that the least liquid markets (WTI, Brent, and Dubai) set the price for most liquid markets. Oil reporting agencies assess their prices based on information about bids and offers, concluded deals, as well as other private and public information gathered by journalists. Since oil prices are 'assessed' prices and given that the type of information used in these assessments and pricing methodologies differ, these agencies do not always produce the same price for the same benchmark.

Second, the nature of these benchmarks tends to evolve over time. Although the general principle of benchmarking has remained more or less the same over the last twenty five years, the details of these benchmarks in terms of their liquidity and the type of crudes that are included in the assessment process have changed dramatically over the years. The assessment of the traditional Brent benchmark now includes the North Sea streams Forties, Oseberg and Ekofisk (BFOE) and that of the Dubai price includes Oman and Upper Zakum. These streams are not of identical quality and often fetch different prices. Thus, the assessed price of a benchmark does not always refer to a particular 'physical' crude stream. It rather refers to a constructed 'index' which is derived on the basis of a simple mathematical formula which aggregates the assessed prices of the different crudes.

Third and most importantly, in the last two decades or so, many financial layers (paper markets) have emerged around these benchmarks. These include the forward market (in Brent), swaps, futures, and options. Some of the instruments such as futures and options are traded on regulated exchanges such as ICE and CME Group, while other instruments, such as swaps and forward contracts, are traded bilaterally over-the-counter (OTC). Nevertheless, these financial layers are highly interlinked through the process of arbitrage. Over the years, these markets have grown in terms of size, liquidity, sophistication and have attracted a diverse set of players both physical and financial. These markets have become central for market participants wishing to hedge their risk and to bet (or speculate) on oil price movements. Equally important, these financial layers have become central to the oil price identification process.


The Links between Physical and Financial Layers

At the early stages of the current pricing system linking prices to 'physical' benchmarks in formulae pricing provided producers and consumers with a sense of comfort that the price is grounded in the physical dimension of the market. There are still big suspicions as to whether the oil price derived from paper markets such as the futures markets reflects the physical realities of the market - which, in part, explain the current reluctance of many players to adopt futures prices in the pricing formulae. In recent years, the futures markets have attracted a wide range of financial players including swap dealers, pension funds, hedge funds, index investors, technical traders, and retail investors. There are concerns that these financial players and their trading strategies could move the oil price away from the 'true' underlying fundamentals.

However, these suspicions implicitly assume that the process of identifying the price of benchmarks can be isolated from the 'contamination' of financial layers. This is far from reality. Oil markets are highly interconnected and form a complex web of links, all of which are needed for the price discovery process. In fact, one could argue that without these financial layers it would not be possible to 'discover' or 'identify' oil prices in the current oil pricing system.

The NYMEX contract is a physical one and the price of the futures contract converges to the spot price at the expiration of the contract. Hence, in the case of WTI, the main benchmark used to price oil shipments to the US, the use of the futures price instead of assessed prices in the pricing formulae would make little difference. In fact, the depth and the high liquidity of the futures market surrounding WTI and the diversity of its market participants should incentivize traders to use the futures price in their formula pricing. In practice though, there is some evidence that the front-month WTI futures price can exhibit high volatility around the expiry date in some instances, which can explain the preference of traders to stick to assessed WTI prices.

In the case of Brent, the issue is more complex. The Brent futures contract is not a physical one and at expiration the futures price converges to the ICE Futures Brent Index. This in turn is based on the 21 day BFOE market (the informal forward Brent market). This peculiar feature of the Brent market has led to the creation of a series of market layers for the purposes of risk management such as Exchange for Physicals (EFPs) and contract for differences (CFDs) markets. Trades in the levels of the oil price rarely take place in these layers. Instead, these markets trade price differentials which fluctuate based on hedging pressures and expectations of traders. The participants in these markets are mainly 'physical' and include refineries, producers, downstream consumers, and market makers. Financial players such as



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pension funds, index and retail investor have limited presence in these markets.

This feature poses a legitimate question: how can markets that trade price differentials set the price level for the oil market? The answer is that the information derived from financial layers plays an important role in identifying the price of the benchmark. In the Brent market, the oil price in the forward market is sometimes priced as a differential to the price of the futures contract on ICE using the Exchange for Physicals (EFP) market. The price of Dated Brent or North Sea Dated (the closest one can get to the spot market in Brent and the most widely used reference price in contracts) in turn is priced as a differential to the forward market through the market of Contract for Differences (CFDs) which is a swaps market. This is also evident in other benchmarks such as Dubai. Given the limited number of physical transactions and hence the limited amount of deals that can be observed by oil reporting agencies, the price of Dubai, the main benchmark used for pricing crude oil exports to East Asia, is priced as a differential to the very liquid OTC Dubai/Brent swaps market. The OTC Dubai/Brent swap market is in turn linked to Dated Brent which in turn is linked to the Brent futures market through CFDs and EFPs.

Thus, one could argue that the level of the oil price is set in the futures markets; the financial layers such as swaps and forwards set the price differentials. These differentials are then used by oil reporting agencies to identify the price level of a physical benchmark. If the price in the futures market becomes detached from the underlying benchmark, the differentials should in principle adjust to correct for this divergence through a web of highly interlinked and efficient markets.

The above discussion has some important implications. First, the idea that one can isolate the physical layers from the financial layers in the current oil pricing regime is a myth. The oil price is jointly or co- determined in both layers. The issue of whether the paper market drives the physical or the other way around is difficult to construct theoretically and test empirically.

Second, the idea that the current oil pricing system can generate a spot price that reflects the true current fundamentals of the oil market is also flawed. In reality, changes in the benchmark price reflect the hedging and speculative pressures and the arbitrage between very efficient markets. These price changes are in turn influenced by expectations of these players most of which are physical and how the flow of information affects their expectations. The pricing system is a reflection of how the oil market functions: if market participants attach more weight to future rather than current fundamentals and/or if market participants expect key players to react in certain ways if prices go above or below a certain level, these expectations will be reflected in the different layers and will ultimately be reflected in the assessed price.

Third, the current regulatory reforms in the US and elsewhere aimed at derivatives instruments will affect the pricing of 'spot' crude oil by affecting the structure of different layers in the oil market and the players' incentives to hedge and speculate. However, their impact remains unclear at this stage.

Finally, the above analysis shows that the level of oil price, which consumers, producers and their governments are most concerned with, is not the most relevant feature in the current pricing system. Instead, the identification of price differentials and the adjustments in these differentials in the various layers underlie the basis of the current oil pricing system. Unfortunately, this fact has received little attention and the issue of whether price differentials between different markets showed strong signs of adjustment in the 2008-2009 price cycle remains an open question and has not yet received its due attention in the empirical literature.

Conclusions

The current oil pricing system has now survived for almost a quarter of a century, longer than the OPEC administered system did. While some of the details have changed, such as Saudi Arabia's decision to replace Dated Brent with Brent futures price in pricing its exports to Europe and the more recent move to replace WTI with Argus Sour Crude Index (ASCI) in pricing its exports to the US, these changes are rather cosmetic. The fundamentals of the current system have remained the same since the mid 1980s (i.e. the price of oil is set by the 'market' and not by an administrator). In the light of the 2008-2009 price swings, the current oil pricing system has received wide criticisms with some observers calling for its radical overhaul such as bringing back the administered pricing system or calling for producers to assume a greater responsibility in the method of price formation by removing destination restrictions on their exports, or allowing their crudes to be auctioned. These calls have so far received limited attention. However, they are constant reminder of the unease that some observers feel about the current system. Although alternative pricing systems can be devised (at least theoretical ones), the reality remains that none of the key players has an interest in rocking the boat, especially that the pricing system has generated a current price range that 'everyone is happy with'. The contradiction is that even in times of high volatility and sharp price swings, key market players get very concerned about oil price behavior and its global and local impacts, but show little or no interest in the pricing system and the market structure that generated such price behavior in the first place.

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IAEA Report Turns Up the Heat on Iran as Sanctions Bite Energy Sector*

Amrita Sen & Helima Croft**



The International Atomic Energy Association (IAEA) released its latest report on Iran and once again accused the government of failing to answer critical questions about its nuclear program. The IAEA stated that Iran is continuing to enrich uranium, in defiance of UN Security Council demands to desist from such activities, and has produced 6,108 pounds of low enriched uranium at its Natanz facility. This represents a 15% increase in the country's stockpile over the past three months. The inspectors also noted that Iran has refused to respond to questions about the origins and the purpose of the previously undisclosed Fordow Fuel Enrichment Plant near Qom and to provide key details about its new heavy water production plant. In addition, the report stated that Iran has failed to disclose information about its efforts to manufacture centrifuges. In light of Iran's failure to be forthcoming with inspectors, the IAEA says that it remains concerned about the possible existence of undisclosed nuclear activities involving military-related organizations, including activities "related to the development of a nuclear payload for a missile." The nuclear watchdog agency also strongly criticized Tehran for barring two senior inspectors from the country after accusing them of mishandling sensitive information. The inspectors, who have a deep familiarity with the Iranian program, were banned just days after the UN Security Council imposed new sanctions on Iran. The IAEA warned that such action "hampers the inspections process and detracts from the agency's ability to implement safeguards in Iran." UN Secretary General Ban Ki Moon signaled his displeasure about Iran's treatment of the inspectors, insisting that he had "full confidence in the professionalism and impartiality" of his team. Iran's IAEA representative responded by claiming that it was "ridiculous" for the agency to complain about two individuals and that it was the country's right to vet inspectors.

The IAEA's concerns about the lack of Iranian compliance with the inspection protocols were echoed by a leading arms control think tank. The Institute for Science and International Security said that Iran was taking a "minimalist" approach to its safeguards agreement with the IAEA and that there is a danger that "Iran may seek to increase its capability to divert nuclear materials in secret and produce weapons grade uranium in a plant unknown to inspectors or western intelligence agencies." Iran is currently enriching uranium at 20% levels, up from 3.5% a year ago. Enrichment levels of over 90% are required for nuclear weapons production, and senior Obama administration officials continue to insist that Iran remains several years away from having the breakout capability to quickly assemble a bomb and a delivery system. However, this timeline is contingent on Iran's not having any additional secret enrichment sites similar to the one near Qom (New York Times, September 6, 2010).

* The article is jointly published with the Barclays Capital Weekly Geopolitical Update.

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As GCC institutions struggle with the debt crisis, draining excess liquidity from market pockets and curbing inflationary overheating requires careful capital deployment. The region's most pressing infrastructure and economic needs persist, calling for unparalleled insight into institutional asset allocation to capitalise on sparse return potential. The **Middle East Investments Summit 2010** is the premium forum for the foremost institutional investors of the region.

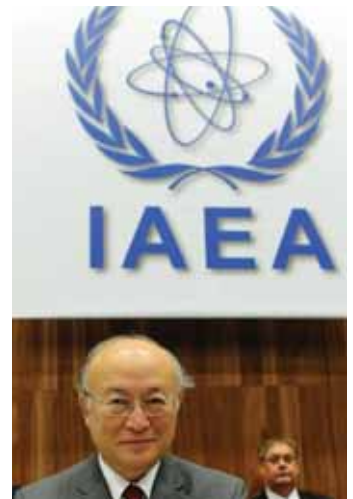
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inspiration and
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strategy ”

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A prominent Iranian dissident group, the People's Mujahedin of Iran (MEK), claimed that it had identified a covert nuclear enrichment facility under construction northwest of Tehran. The group claims that Iran has been engaged in major excavation work at the site for the past five years, building a network of underground tunnels designed to hold centrifuges that could be used to enrich uranium to weapons-grade levels. The MEK is credited with successfully exposing Iranian clandestine nuclear activities in the past, including a large centrifuge installation at Natanz in 2002. Nonetheless, State Department officials have reportedly expressed skepticism about MEK's latest claims and have cautioned against jumping to the conclusion that the facility is being used for the nuclear program as opposed to conventional military purposes (Washington Post, September 9, 2010). The revelation of another secret enrichment site would likely put pressure on President Obama to harden his stance on Iran and could increase speculation about a possible Israeli military strike. According to Matthew Fuhrmann, the Council on Foreign Relations Nuclear Security Fellow, such sites are a major concern because "the construction of covert facilities in the past is typically only associated with covert nuclear weapons programs."



Impact Of Sanctions On Production Capacity

While the latest IAEA report seems to suggest that sanctions have thus far failed to halt Iran's nuclear activities, there are indications that the punitive measures are hurting the Iranian economy, particularly the all-important energy sector. Despite having the third largest proven oil reserves in the world, Iran has failed to capitalize on the resources, with production capacity stagnant at around 4 mn b/d for a while. Already crippled by international sanctions, Iran has also found it difficult to raise its crude output levels because it has some of the highest decline rates in the world. Iran's fields have a natural annual decline rate estimated at 8% onshore and 11% offshore, with recovery rates at 20- 25% (at least 10% less than the global average) and offshore production lagging at about 0.85 mn b/d. An estimated 400-700 thousand b/d of crude production is lost annually because of declines in the mature oil fields; to offset this, the oil fields require regular structural upgrades, including enhanced oil-recovery efforts, such as natural gas injection. The Revolutionary Guards themselves warned in May 2010 that Iran required \$25bn/year to maintain its current crude oil production levels, with petroleum minister Massoud Mir- Kazemi warning that without such investment, output rates will fall rapidly. Last year, the Islamic Consultative Majlis warned that without proper investment, Iran may cease to export crude oil within eight years.

Yet new reserves of oil have continually been discovered; the latest find is the Abuzar oil field, near Kharg Island, where Iran estimates about 4bn barrels of oil. However these discoveries have failed to translate into higher production. Bringing in critical foreign technology for assistance has been difficult because of various levels of sanctions levied against Iran by the US and EU. In addition, potential foreign investors for offshore oil and gas projects have been deterred by the complex structure of the buyback contracts that Iran favors. (Under these deals, the IOCs invest money upfront and then hand over a field to NIOC once production starts; the oil major recoups its costs at a pre-agreed rate of profit, based on global oil prices and field production targets.) Shell and Repsol have opted out of developing Phases 13 and 14 of the offshore South Pars gas field, which would have integrated with a 16 mn t/yr Persian LNG export venture. Total has withdrawn from another phase for an 8-10 mn t/yr LNG venture, and ENI, StatoilHydro, and other Western IOCs have also walked away from other Iranian projects. Although Chinese companies are now stepping in to replace the Western majors, progress there, too, has not been smooth. For instance, after agreeing to develop the Yadavaran oil field in 2004, Sinopec's progress has been slow. The project, which aimed to increase production to 0.185 mn b/d over two phases, is already running more than a year late, and the scheduled completion date of 2016 looks increasingly doubtful.

The official target in Iran's five-year development plan is to increase capacity to 5.1 mn b/d, with the state-run National Iranian Oil Company (NIOC) setting up a standalone firm, Pars Oil & Gas Company, specifically to manage the oil and gas field's development, but progress has been well below expectations. The scheme's official aim is to nearly triple current annual gas production to 475 bcm/year by 2020, which would make Iran accountable for 10% of global gas output.

However, most of the major developments at South Pars are far behind schedule. Given the lack of foreign expertise and investments and the disappointing progress in natural gas output (with increasing amounts needed for EOR techniques for oil extraction), availability of gas for enhanced oil recovery is also lagging. Far from the 1.2 mn b/d increase in oil production capacity the government expects, we foresee Iran's project pipeline adding around 250-300 thousand b/d up to 2014, on the back of the development of northern Azadegan in two phases (105 thousand b/d), phase 1 of the Joffier (150 thousand b/d) and Yadavaran (85 thousand b/d) fields, and increases at the Resalat oil fields (40 thousand b/d).

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THE WORLD ENERGY CONGRESS

MONTREAL, CANADA

12 – 16 September 2010

Hisham Khatib*

The World Energy Council is the only truly global and inclusive forum for thought, leadership, and tangible engagement, committed to a sustainable energy future. It has a network of over 90 National Member Committees representing over 3,000 member organizations, including governments, industry and expert institutions. Its mission is to promote a sustainable energy future.

The World Energy Council (WEC) works in six main areas: energy and climate policy assessment, energy policy scenarios, energy resources and technologies, rural energy access, urban innovation, and global energy frameworks, including energy trade rules. In each of these areas, WEC targets specific stakeholders, working at the local level with committees and at the global level with governments and organizations such as the UN, and WTO. With the involvement of mayors, energy ministers and CEOs of energy companies, WEC aims to promote a sustainable energy future by fostering dialogue and debate, encouraging the development of sustainable energy policies, and facilitating the exchange of information and ideas.

Every three years, the World Energy Council hosts a major international energy event, the World Energy Congress. The Congress brings together thousands of energy leaders from around the globe. In the intervening years between Congresses, WEC holds regional Energy Leaders Summits. These are exclusive, by-invitation-only events targeted at energy ministers, CEOs of energy companies members that aim to facilitate dialogue and the exchange of ideas focused related to specific regional topics. WEC is a UK-registered charity based in London.

The 21ST Congress of the WEC took place in Montreal over the period 12 -16 September 2010. It was attended by over 6,000 delegates from 137 countries, including some 70 ministers, making it one of the world's most important energy gatherings and professional meetings. The Congress which is held once every three years had an energy exhibition on the side lines that attracted 175 companies. The Congress activities also included a Future Energy Leaders Program for over 300 young energy specialists under 32 years old.



Responding to Global Challenges

The theme of the WEC Montreal 2010 Congress provided a framework to address the four major challenges facing the energy community, global leaders and the general public. WEC has made a strong commitment to responsible energy consumption by analyzing these fundamental challenges. The four challenges termed the four "A"s - Accessibility, Availability, Acceptability, and Accountability - have become WEC's core values. Each day of the Congress was focused on one of these major challenges.

Accessibility

The first day focused on the need to manage the planet's growing energy demand. It is becoming increasingly obvious that future energy consumption simply cannot continue at the rate of growth witnessed in recent years around the world. Moreover, nearly two billion people today have no access to reliable energy supplies for their basic needs. This situation can no longer be ignored. Demographic and economic growth in emerging economies will absorb most of the global energy system's additional capacity. Responding adequately to this growing demand will pose major challenges. The recent slowdown of the

* Dr. Hisham Khatib, Global Energy Award Laureate (2007).

global world economy may bring temporary respite, but the challenges are still imminent.

The plenary of the first day was addressed by leading energy specialists that included Denial Yergin (HS CERA), and Khalid Al-Falih, President of Aramco (Saudi Arabia). Yergin stressed the long lead time of energy systems, and correspondingly that change is going to be slow and lengthy. This coincided with Al-Falih's view that fossil fuels will continue to dominate the world energy scene for decades to come.

Energy poverty was stressed: till now over one and a half billion people do not have access to electricity. Two billion have no access to commercial forms of energy and other two billion only limited access. Adequate supplies of energy, particularly electricity, are essential for sustainable development especially those of low income developing countries.

Availability

The second day of the Congress was devoted to "Availability".

The Earth's primary energy sources have not changed significantly since the energy events of the 1970's. Fossil fuels still constitute the main basis of our energy supply. Recent concerns about climate change and production of conventional oil in the next 10-20 years are challenging traditional thinking. These and other similar issues require a re-assessment of supply potential of the different energy sources already available today or to be developed in the near future.

What is the right energy mix for the years to come?

IEA's Fatih Birol of the International Energy Agency presented a preliminary overview of the findings of the World Energy Outlook 2010 study to be launched in November. It stressed Day One findings that fossil fuels will continue to dominate the world energy supplies for decades to come, while renewables will significantly grow year after another; however, since they are starting from low base their contribution will be modest by 2035. Birol also drew a picture of the challenges plaguing energy markets, like the growing insensitivity of oil markets to price changes. He also called for more government interventions.

An important component in future energy supplies will be shale gas. Yergin termed this as "shale-gale". It is going to enhance global reserves probably for few centuries. Being abundant and more evenly distributed over many regions of the world, it will slowly but surely improve the share of gas and its availability in the energy balance of different world regions.

A major form of energy, nuclear, was also addressed. It was obvious that nuclear will continue to play a major role, although slightly decreasing in global energy supplies. Nuclear expansion will be mainly in China, India, Korea, and few other developing countries.



Acceptability

The third day discussed the "Acceptability" of energy sources.

Sustainability and acceptability are now the prerequisites for any long-term energy strategy for our planet. In fact, any viable energy strategy must now include complete assessments and management plans for environmental or social impact. It must also be formulated with public participation and give priority to more efficient systems and technologies. The development of efficient, sustainable energy policies and practices are a complex task involving many parties.

Lester Brown of the World Policy Institute, as well as many speakers stressed the detrimental effect of increased green house emissions on the climate. The risks that production of fossil fuels poses to the environment, like recent events in the Gulf of Mexico, were also mentioned. Some delegates stressed that gas shale may contribute emissions that are as serious as that of coal. Also its danger to fresh ground water supplies cannot be ignored. Technology will need to play a major role in managing these threats.

Accountability

The fourth and final Day covered "Accountability". That is financing energy projects requires clear policies and stable regulatory frameworks to ensure optimal use of resources and good rates of return on investment. Achieving a balance between these three elements is not easy, and will require unprecedented levels of public-private cooperation and new forms of government partnership.

Presentations were made by Pierre Gadonneix, WEC President, as well as Christoph Frei, WEC Secretary General. Pascal Lamy of the WTO stressed the importance of regulations in responsibly managing the markets. The Day activities also involved a Ministerial Round Table that included seven ministers.

Main Discussion Interests

In such a wide ranging conference all aspects of energy are thoroughly discussed. Of course there are many repetitions. But few topics and themes gained prominence:

China, Shale Gas and Energy Efficiency.

China and the Global Energy Scene

China is now the world's largest greenhouse gases emitter. Its investments and energy decisions affect global energy more than any other country. China is developing its coal resources and soon may become a coal exporter. It is also developing its nuclear energy facilities and building more nuclear power stations than any other nation. It is also building a large coal firing plant each week. Such plants utilize super critical and ultra super critical parameters with high efficiency of 45%. Efficiencies that exceed 50% are in sight. It is developing its huge hydro electric resources and building ultra high voltage direct current grids UHV-DC of ± 800 kV, the worlds highest that can transmit 6 GW of electric power, over long distances. What is happening in China is going to affect the world's energy scene and its future technologies.

It is recognized that a large proportion of China's energy is utilized in the production of exports. This increases China's energy consumption but reduces that of the importers. Hence, China is a "virtual energy" exporter.

Shale Gas

The other recurring theme was that of shale gas. The possible reserves and its contribution to global energy supplies can be enormous. Shale gas was known to exist all the time, however it is only recently that advances in geology and technology made its exploitation possible and economical through modern drilling technologies like combined horizontal drilling with hydraulic fracturing.

A recent study by the WEC stated that the resources base (gas-in-place) in the USA amounts to 3.760 Tcf of which 475 Tcf is considered to be economically recoverable. Similarly over 5,400tcf resource base exists in the Former USSR while the Sub-Saharan Africa and the Middle East and North Africa regions each hold over 1,000 Tcf. Production costs in the USA, with environmental precautions, are expected to be in the range of \$ 6 – 8 per mn BTU.

However, I think, it is early days to ascertain future reserves and energy contribution of shale gas. It is now the euphoria period. It will be few years before controversial issues related to shale gas are concluded. Such issues are already mentioned and are related to emissions as well as pollution of deep water aquifers. Competition between LNG and gas shale was also discussed since shale can be much cheaper. However it will be some time until these issues are cleared and their economies are ascertained.

Energy Efficiency

All through the Congress discussions of energy efficiency was stressed as the win-win situation. It is the most effective way to manage limited energy supplies and curb emissions. The benefits of most efficiency measures outweigh costs and the pay-back period can be rather short, sometimes in months. What is delaying the application of efficiency measures is the lack of knowledge and information to consumers as well as the shortage of initial

investment capital.

Electricity is the most important energy carrier. According to the IEA and US-DOE, electricity consumption is expected to grow at an average rate of 2.3% annually over the next 25 years, higher than that of total primary energy, which is expected to grow at a rate of less than 2%. Although electricity contribution to final consumption by energy consumers is limited, however its production now amounts to almost 40 % of primary energy consumption, and is increasing annually. Global average efficiency in electricity production amounts to only 30-33% due to the long life of old inefficient vintage plants burning coal. However with the increasing introduction of modern CCGT and higher efficiency coal burning facilities, this efficiency is expected to gradually improve annually to over 40 % in 2035.

Although electrification is expected to improve energy efficiency, however, this needs not to be the case in every application. For example, cooking by LPG and heating by burning natural gas can be more efficient than executing these services by electricity.

Conference Conclusions & WEC Declaration

In the final Congress Declaration, WEC President Pierre Gadonneix stressed that the Congress has made a significant step forward in identifying the following:

- First, the energy sector's new agenda
- Second, the real constraints and opportunities encountered in tackling challenges
- Third, the road ahead to adjusting energy policies and fostering international cooperation

End-goal has to be sustainable growth.

At a time when all countries are working to develop strategies to put the financial crisis behind them, growth is a legitimate and worthwhile goal.

When accompanying growth, energy accessibility and availability contribute concretely to improving the living standards of people.

However, the kind of growth we have experienced in the past leads us to address three issues: First, security of supply. Second, environmental protection and climate change. Finally, inequalities within and across countries is another major concern, as energy goes hand in hand with development. Inequality hinders development and depresses demand. Sustainability also means more social equity.

What Does It Take To Accomplish These Goals?

The technologies we need are at hand.

On the demand side, solutions already exist and we must just go forward and continue the investments. On the supply side, there are also mature and competitive technologies available. Further out, we will need to invest to develop: Generation 4 nuclear, carbon capture and storage, more efficient photovoltaic technologies, electricity storage, and second-generation sustainable bio fuels.

We have, on earth, enough natural resources to meet demand. The real issue is not so much their overall level, but their uneven distribution across nations, and the fact that ensuring security of energy supply will necessarily lead to an increase in energy prices.

The Declaration states that it wants to address a fundamental challenge for building the future, particularly governance.

There are, in fact, two all-important factors to consider at different levels: at a national level: energy policy, and at a worldwide level: international cooperation

The global crisis has proved that the market alone cannot solve our problems. The congress has reinforced our belief even more - the invisible hand of the market cannot address alone all our issues. Policies are needed.

That said, regulatory failures also exist and it is not an easy task to define what a "right" energy policy is. Therefore, we must find a new balance between market and regulation. And, at the same time, we will have to make sure that these public policies are coherent and compatible at an international level and enable us to address our challenges.

Energy players require long-term horizons. Energy industry timeframes are long term: investments are made over periods of 3 to 15 years, and plants are built to last for 30 to 60 years. In our sector, 2030- 2050 is a much more relevant horizon than 2020.

We must take up the urbanization challenge and turn it into an opportunity. Two billion new urban dwellers are expected by 2030 - the equivalent of seven Shanghais or Jakartas, or ten Londons each year...

Sustainable growth is no longer an option. It is a necessity. While the goal is clear, finding the best path to reach it will be a challenge for all. I believe that to rise to the challenge, we will have to rely more than ever on cooperation and dialogue between all stakeholders – governments, businesses, researchers and NGOs. WEC can be a driving force in this movement.

This Congress has indeed demonstrated its capacity to catalyse ideas and put forward new visions. Bringing together representatives from all energy sectors and all countries, WEC is a formidable think tank that bases its global work on local realities. Its technical programs and regional plans enable immediate relevant action. Its flagship studies are designed to give political and business leaders the information and insight they need to shape the future while factoring in three criteria: equality, development and climate.

Furthermore, the WEC has revealed its roadmap towards a global sustainable development. It is based on five pillars: to contribute effectively to global sustainable development, to address climate change challenges, to improve the living of people, to manage risk responsibly and also to manage the energy transition to 2030/2050.

At the very centre of the transition is a need for financing (over \$20 trillion by 2030).



Clear policies and stable regulatory frameworks, Effective national policies that benefit from international convergence and linkage through international frameworks, regional infrastructure interconnection, and urban innovation, more smart mobility and energy efficiency, are key parameters to manage the energy transition.

Conventional and non-conventional fossil fuels will continue to dominate energy supply for the decades to come. A number of major economies will continue to substantially rely on coal. Opportunities in deep-water pre-salt, in oil sands, shale gas or oil shale are vast. The majority of conventional and new forms of energy consume water. As a consequence, critically water exposed energy infrastructure elements have to be planned and operated strategically.

Last but not least, accidents can happen in many places in spite of a great safety culture. Sharing successful practices and peer review within and across segments benefits all actors of the energy sector, with regards to accident prevention, intervention and communication. Disaster response and infrastructure reconstruction have been the founding cause of the WEC. Solidarity and need for action on regional and global level require and benefit from the existence of networks for coordination – such as the World Energy Council's.

The Congress Declaration is available at the Congress site <http://www.wecmontreal2010.ca//>

SAUDI ARABIA NEEDS \$50 BILLION NEW INVESTMENTS IN DESALINATION PROJECTS

Querubin J. Minas



02 October 2010

JEDDAH: Amid freshwater scarcity, population dynamics and rapidly growing economy, Saudi Arabia - with unlimited saltwater resources - is confronted with an urgent need to increase its sustainable supply of water. Desalination is set to be the key in the provision of clean water.

Against this backdrop, the four-day Saudi Water and Power Forum (SWPF) 2010 on the theme of "Sustainable Prosperity Through Knowledge, Innovation and Cooperation" kicked off Sunday (Oct. 3) at the Jeddah Hilton, aiming at being a catalyst for change.

At the Forum, a new study on how the Kingdom can become a leader in water industry, among others, was unveiled.

In emerging economies, major investment in water resource infrastructure is a high-priority area.

In this regard, managing the development of water desalination industries, regionally and internationally, call for the urgent need to implement plans and strategic studies.

Nomura International plc said in its industry report that installed desalination capacity worldwide is expected to almost double to 132.5 million m³/day by 2016 from an estimated installed desalination capacity of 69.8 million m³/day in 2009.

The study noted that Saudi Arabia needs new investments worth more than \$50 billion for desalination projects during the next 10 years.

The Kingdom's recent projects tend to focus on the industrial western and eastern part of the country where pipelines link supply to urban areas such as the third phase of the Yanbu desalination plant (Yanbu-III) which will feature three pipelines - one linking Ras Al- Zour with Riyadh, another with Hafr Al-Batin and Naeeriya, and the third for Yanbu-III, it added.

Most desalination in Saudi Arabia is through multi-stage flashing, but reverse osmosis has emerged as an important water desalination technology and is growing at a rate of 20 percent annually. The largest production from an individual installation is the Shuaibah III project in the

Western province, serving Jeddah, Makah and Taif, and producing 880,000 m³/d.

The Middle East and North Africa (MENA) region, with its oil & gas-driven growth, accounts for half of existing capacity and 55 percent of expected growth through to 2016, it added.

The global desalination market is set to be worth \$105 billion over the 2010-16 period (capex costs), according to DesalData.com, 50-60 percent of which will be directed toward the MENA region.

The desalination market in the MENA region could be worth \$55 billion-\$60 billion through to 2016, it added.

However, MENA region's already scarce per capita water resources are likely to shrink further as the population expands. The population of MENA countries is expected to increase at an average of 1.6 percent per year between 2010 and 2020. This suggests that the population growth rate in the region will be among the highest in the world over the next decade, the report noted.

As a result of population growth, per-capita water resources in the MENA region are likely to decline faster than expected by around 15 percent between 2010 and 2020, while globally the average per-capita water resources are projected to decline by an average of 10 percent over the same period.

MENA accounts for 50 percent of the world's largest desalination plants, both online and in the planning stages, the report said.

Saudi Arabia, UAE, Kuwait, Qatar, Bahrain, Oman, Iraq and Iran account for about 40 percent of the world's desalination capacity. Saudi Arabia has headed the list of top 10 countries by total installed capacity since 1945, with the UAE the next highest GCC peer.

Within the MENA region, the report further said, Iraq has the highest level of per-capita water resources at 2,396m³, "but even this is less than half of the global average of 6,335m³."

Kuwait has just 7m³ per person. The benchmark for a water shortage is 1,000m³, and Iraq, Iran, Syria and Lebanon are the only countries in the region above this level.

The data revealed that agriculture accounts for a very large percentage of total water used. Although the percentages are lower (around 50 percent of total water withdrawal) for small countries such as Bahrain and Lebanon, agriculture accounts for 80-90 percent of water withdrawal in the majority of other countries in the region.

The bulk of agricultural water use is via irrigation systems, but a lot of water evaporates before it is put to effective use, the report noted, owing to the high temperatures and arid conditions in the MENA region.

The main factor determining future demand for water is likely to be industrial usage, Nomura said in the study.

In the majority of MENA countries, industrial withdrawal accounts for well under 10 percent of total water consumption, and in most MENA countries it is less than 50m³ per capita, substantially lower than the G8 average of 450m³, it noted.

Governments in the MENA region have adopted aggressive industrial diversification policies in a bid to redress imbalances in industrial structures currently heavily weighted toward oil and natural gas.

The study noted that the MENA region has the fewest impediments to the introduction of desalination plants. Energy cost is not an issue, it added.

In general, electric power companies are the greatest industrial users of water, along with materials industries, including petrochemicals and steel. This suggests that industrial diversification centering on the materials sector, and the increased demand for electric power accompanying it, will result in higher industrial demand for water in the MENA region. And with substantial oil and gas reserves, desalination costs in the MENA region are among the lowest in the world, the study noted, saying that 70 percent or more of cities in the region are located on the coast or in adjacent regions.

The average installed capacity of desalination plants currently under, or scheduled for, construction is around 300,000m³/day for multistage flash (MSF) distillation plants and around 70,000m³/day for RO (reverse osmosis) membrane plants, with average construction costs per plant of around \$500 million for MSF plants and around \$75 million for RO plants.

Major projects are currently underway in both Saudi Arabia and the UAE. Desalination development has tended to rely on expansions of existing sites in multiple phases, such as the Jebel Ali complex in Dubai, where an additional 477,330 m³/d of capacity is currently under construction. The UAE has invested a total of \$50 billion in power and desalination during the past 10 years.

Moreover, environmental concerns are adding to costs.

Although the region offers attractive growth prospects, increasingly there is concern over the long-term impacts that desalination has on the Arabian Gulf. It is suggested that as much as 65 tons of antipant, 24 tons of chlorine and almost 300kg of copper are pumped back into the Arabian Gulf daily from desalination plants around the region. While many of the chemicals for antipants are approved by the Food and Drug Administration (FDA) and biodegradable, the deposits of minerals may provide an imbalance to the local ecosystem and establish the need for mineral recovery systems in desalination units, hence, increasing costs, the report added.

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[http://www.zawya.com/story.cfm/sidZAWYA20101002043313/Saudi%20Arabia%20Needs%20\\$50B%20New%20Investments%20In%20Desalination%20Project](http://www.zawya.com/story.cfm/sidZAWYA20101002043313/Saudi%20Arabia%20Needs%20$50B%20New%20Investments%20In%20Desalination%20Project)

Crisis on the Nile: An Egyptian View

Abdel Monem Said Aly*



It was one sole paragraph in one article of a multi-article agreement that triggered a semi-crisis situation among the Nile basin states. Paragraph B, article 14 turned a promise of regional cooperation into tension and a threat to the national security of some states. It called for the right of all Nile basin states to erect projects on the Nile. Those who know international relations know that crises and wars can emerge from much less than a single paragraph.

This story finds its origins in colonial times. It was in 1902 and 1929 when Britain, the custodian of Egypt and Sudan, negotiated and signed agreements with Ethiopia to give both Arab countries historic rights to the waters of the Nile. In 1959, Cairo signed an agreement with Khartoum that guarantees Egypt 55 billion cubic meters while giving Sudan 18 billion annually. In fact, Sudan has never used the amount assigned to it, while Egypt has “borrowed” what it needed or stored it behind its dams, particularly the Aswan Dam after 1970.

The other Nile basin states have questioned the legality of these three agreements, arguing that what was signed in colonial times was invalidated by independence. The Egyptians and Sudanese have responded that Ethiopia was an independent country at the time of the 1929 agreement. They argue that one of the foundations of the Organization of African Unity (now the African Union) is that agreements signed during colonial times remain sacrosanct, and that international law acknowledges not only historic rights

to river waters but also does not permit any country at a river’s source to affect the flow of waters to other riparian countries.

Legal debates aside, Cairo has taken a different approach. The starting point is to differentiate between the Nile basin and the Nile River. Regarding the former, rainfall is approximately 1,660 billion cubic meters annually, 85 percent of which is on the Ethiopian high plateau. The remaining rainfall is recorded at the African great lakes and Nile basin states including Congo, Sudan, Tanzania, Uganda, Central Africa, Kenya, Rwanda and Burundi. What reaches the Nile River is about 100 billion cubic meters, some of which flows into the Mediterranean.

What is needed, Cairo has argued, is the creation of projects that use the vast remaining quantity of water to support development in all the participating countries. The Nile Basin Initiative was born as a partnership among the Nile riparian states that “seeks to develop the river in a cooperative manner, share substantial socioeconomic benefits, and promote regional peace and security”. It was formally launched in February 1999 by the water ministers of ten countries:

Egypt, Sudan, Ethiopia, Eritrea, Uganda, Kenya, Tanzania, Burundi, Rwanda and the Democratic Republic of Congo. (Eritrea is not a Nile basin state but is participating because of its past relations with Ethiopia).



For the next decade, these countries strove to establish a framework of cooperation involving a wide range of possibilities for projects that allow the generation of electricity and the collection of large quantities of water wasted in the Nile marshes. A regional commission was planned to lead the process of cooperation in a variety of fields. However, differences remained over recognition of past agreements and “historic rights”. With negotiations on these issues still ongoing, on May 14, 2010 four countries, Uganda, Ethiopia, Rwanda and Tanzania, opened an Agreement on the Nile River Basin Cooperative Framework for signature for a period of one year until May 13, 2011. The event took place at Lake Victoria Hotel, Entebbe, under the auspices of the government of Uganda. The four founding countries signed immediately and were joined shortly thereafter by Kenya.

In a way, the initiation of this agreement was the flashpoint that announced the birth of a “crisis”. As the agreement recognized neither historic rights nor past agreements, and paragraph B, article 14 gives the Nile basin states unrestricted rights to erect projects on the Nile as they see fit, it was natural that Egypt and Sudan viewed the agreement as possibly affecting negatively the flow of waters to their respective countries, hence threatening their vital national interests. Accordingly, they called for recognition of historic rights and for unanimity over any new project on the Nile. The signing states saw this position as “unjust” in view of the difference in the degree of development of their countries as compared with Egypt. The media played its part in turning negotiating positions into national crises.

Cool heads, however, prevailed. The leaders of the signing states clarified that they had no intention to harm the vital interests of other countries, particularly Egypt and Sudan. This made it possible for the latter to present their case and declare their readiness to assist in the development

of the other basin states. Both sides announced their intention to continue negotiations. The crisis went into abatement.

But resolution of contradictions remains a target. Luckily, there is no imminent project that might put the process to a test. For the present, there is plenty of water for all. For the future, in the Egyptian view, there is enough as well — provided that all the Nile basin countries choose the right kind of projects that help all sides to develop.

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The Daily News – Egypt, 11 July 2010.

<http://www.thedailynewsegypt.com/index.php/Opinion/Global-Views/crisis-on-the-nile-an-egyptian-view.html>

Erratum: Please note that in the article “Recent Developments in LNG Markets & Prices,” by James T. Jensen, MEES: Energy & Geopolitical Risk, Vol.1, no. 8, September 2010, Figure 8 was published mistakenly on both pages 17 & 20.



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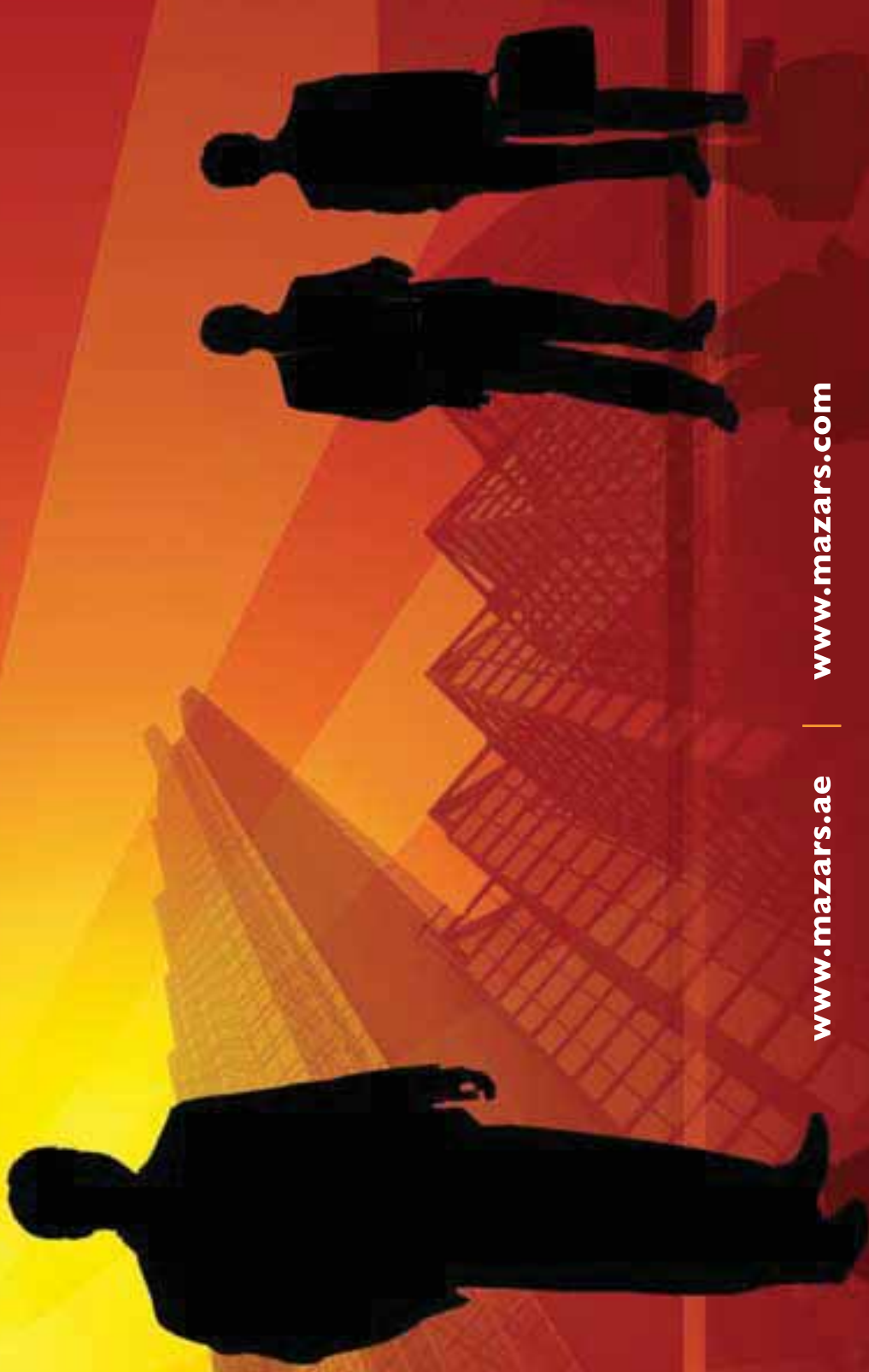
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